

Currently available, published genetic data (*i.e.*, mtDNA and RAPDs) apparently lead to different conclusions regarding subspecific distinctions in spotted owls. Therefore, for the purposes of this finding, we adopt the taxonomy accepted by the American Ornithological Union (AOU 1957), which recognizes the California spotted owl as a distinct subspecies (*Strix occidentalis occidentalis*).

Life History

Mating System and Reproduction.

Spotted owls usually reach reproductive maturity at two years of age, although first year birds have sometimes nested the season after they were hatched. Considerable variation exists in both the percentage of pairs that nest and the number of pairs that successfully fledge young, both geographically and from year to year (Verner *et al.* 1992b).

Spotted owls are monogamous with no records of extra-pair copulations. They usually pair with the same mate from year to year, although "divorces" have been documented. The breeding season of California spotted owls extends from mid-February to mid-September or early October. Individuals begin breeding earlier in the San Bernardino Mountains than in the Sierra Nevada. Within a geographic area, individuals begin breeding earlier at lower elevations (Verner *et al.* 1992b).

California spotted owls are mostly nonmigratory, remaining within the same home ranges year round. However, in the Sierra Nevada, some individuals migrate downslope to winter habitats (Verner *et al.* 1992b). Laymon (1988) observed the subspecies migrating from summer home ranges in mixed conifer forests to winter home ranges in lower elevation pine-oak woodlands. He believed that similar migrations may also occur in Southern California. Tibstra (1999) observed that 10 of 22 dispersing juvenile owls having natal sites in coniferous forest habitats above 1,120 meters (m) (3,675 feet (ft)) moved downslope to lower elevation (305 m (1,000 ft) to 732 m (2,402 ft)) pine-oak woodland habitats. Of those ten, data were available through the following spring for only two, both of which overwintered and then moved back to high-elevation sites. The elevational movements of those two owls were significantly correlated with environmental temperature. Tibstra speculated that the pattern of migration to winter range observed in some adults may be established in the first year by dispersing juveniles.

Owls that migrate downslope do so between early October and mid-December and return in late February to

late March. Such migrations range from 15 to 65 kilometers (km) (9 to 40 miles (mi)) with altitudinal changes of 500 to 1,500 m (1,640 to 4,921 ft). Some individuals have also been observed to move between high- and low-elevation ranges one or more times within a single winter (Gutiérrez *et al.* 1995).

Individuals of migratory pairs of California spotted owls migrate to separate winter ranges rather than wintering together. After they return to their summer ranges, they follow the same breeding cycle as nonmigratory pairs, as described below. However, they probably do not spend as much time together at the beginning of the breeding season, because they may not return from their winter range by the time nonmigratory pairs have begun roosting together (Verner *et al.* 1992b, Gutiérrez *et al.* 1995). Individuals of nonmigratory pairs of California spotted owls remain together on the same home range year round, but they do not usually roost together during the winter. However, late in the winter, they increasingly roost together, preen each other, and occasionally copulate. For approximately two weeks before the first egg is laid, pairs roost together and copulate once or twice each evening. For about one week before the first egg is laid, the female spends most of her time near the nest, and the male brings her prey items (Verner *et al.* 1992b, Gutiérrez *et al.* 1995).

California spotted owl eggs are elliptical, white to pearl grey, and smooth to slightly granular in texture. California spotted owl egg laying peaks in mid-April. When egg laying begins, the female spends almost all her time in the nest, and the male supplies almost all of her food. The number of eggs in clutches ranges from one to four, with most nests containing two. Successive eggs are laid approximately three days apart. Pairs continue to copulate throughout, and for up to four days, after the egg laying period (Verner *et al.* 1992b, Gutiérrez *et al.* 1995).

Only the female incubates the eggs. During the first two days of incubation, she may leave the nest for up to two hours, but thereafter she will only leave the nest for 10 to 20 minutes at a time to regurgitate pellets, defecate, preen, or accept food from her mate (Verner *et al.* 1992b).

Eggs hatch after approximately 30 days. Hatchlings are covered with white natal down, with juvenile plumage starting to replace natal down at about 10 to 20 days (Gutiérrez *et al.* 1995). The female broods the hatchlings almost continuously for eight to ten days. During this period, the male supplies food for the female and young. Two to

three weeks after the eggs hatch, the female begins foraging for one to four hours per night. Males have not been observed to feed the chicks directly, but continue to bring food to the nest, which the female passes to the chicks (Verner *et al.* 1992b).

Most chicks fledge 34 to 36 days after hatching. New fledglings are weak fliers and may spend hours or days on the ground. Approximately three days after fledging, most young are able to fly or climb to elevated perches. Within a week, most are able to fly between trees. Both parents continue to feed the fledglings until mid to late September (Verner *et al.* 1992, Gutiérrez *et al.* 1995).

Dispersal. Spotted owls primarily disperse as juveniles (natal dispersal), but may also disperse as adults (breeding dispersal) if habitat within their home range has been degraded or if they have separated from a mate (Verner *et al.* 1992b). Natal dispersal occurs in September and October.

Natal dispersal distances of California spotted owls have been estimated using radio telemetry (Verner *et al.* 1992, Tibstra 1999) and recapturing territorial owls that were banded as juveniles (LaHaye *et al.* 2001, Jennifer Blakesley, Colorado State University, *in litt.* 2002a). Dispersal distances of successfully dispersing owls ranged from 3 km (2 mi) to 76 km (47 mi). Mean natal dispersal distance of 26 owls in the Sierra National Forest and Sequoia National Park estimated using radio telemetry was 15.9 km (9.9 mi) (Tibstra 1999) and median distance of 42 owls on the Lassen National Forest estimated using recapture data was 25 km (16 mi) for females and 23 km (14 mi) for males (Blakesley *in litt.* 2002a). Mean natal dispersal distances of 129 owls in southern California estimated using recapture data were 10.1 km (6.3 mi) for males and 11.7 km (7.3 mi) for females. No significant difference existed in dispersal distance or time to become territorial between sexes (LaHaye *et al.* 2001). In this study, some dispersing owls did not occupy territories until they were four years old, but over 60 percent occupied territories within one year of fledging. Apparent survival of fledglings (calculated as the percentage of banded fledglings that were later relocated) was 31.8 percent.

LaHaye *et al.* (2001) concluded that the presence of conspecifics (members of the same species) may play a vital role in the recruitment of dispersing California spotted owls into a territory, because owls that "settled" (established territories) were significantly more likely to do so in territories that were occupied the previous year than would